EFFECTS OF EXTERNAL CONTINGENCIES ON AN ACTIVELY CARING BEHAVIOR:
A FIELD TEST OF INTRINSIC MOTIVATION THEORY

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(ABSTRACT)

Reward programs and incentive plans are popular methods of increasing desired behaviors in applied settings. Yet, opponents of “carrot and stick” interventions claim these programs are perceived as controlling and as a result are counterproductive to people’s intrinsic motivation to emit a desired response. The current research studied intrinsic motivation theory in a community setting by combining written commitments with external rewards, and manipulating the time at which the reward was delivered (either prior to or subsequent to task completion). It was found that written commitments only had no effect on the rate at which the target response was emitted. Written commitments combined with contingent rewards increased the rate of responding during intervention, but upon withdrawal, response rates dropped significantly below baseline. Written commitments in combination with non-contingent rewards, offered in advance, increased response rates during intervention and were more effective in maintaining responding after the withdrawal of all contingencies. Additionally, the current research used the Actively Caring (AC) Model (Geller, 1991) in an attempt to predict who would be more likely to emit the AC target response. The model did not successfully predict the
rates at which the target response would be emitted. The implications of this research are discussed from the theories of behavior analysis, intrinsic motivation, and equity. Directions for future studies of intrinsic motivation in applied settings are also offered.
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Overview

Intrinsically motivated behaviors are “those that are performed in the absence of any apparent external contingency” (Deci & Ryan, 1980, p. 42). As many behavior change interventions use external contingencies, the effects of these contingencies on the intrinsic motivation to engage in a behavior have been a fruitful area of study in psychology for more than two decades. More recently, the issues surrounding this research and the notion that external rewards will undermine intrinsic motivation have become quite controversial in the field of organizational behavior management (OBM). This conflict has undoubtedly stemmed from the different theoretical perspectives practiced by the researchers of intrinsic motivation and practitioners of OBM.

Traditionally, research in intrinsic motivation has come from a more cognitive perspective (e.g., cognitive evaluation theory; Deci, 1972a, b), while OBM has used the stimulus-response-consequence paradigm of behavior analysis (Skinner, 1953). As such, these two camps have not seen eye to eye, and due to the recent publication of “Punished by Rewards” (Kohn, 1993), the controversy has become more salient. What has not been made apparent, and is aptly reflected in the title of Kohn’s book, is that not all external contingencies are contrived, and not all external contingencies will undermine intrinsic motivation. As such, two primary questions which remain to be answered are: when do external contingencies undermine intrinsic motivation and why do they undermine intrinsic motivation?
Deci (1972a, b) proposed that external contingencies can be perceived either as controlling or as providing feedback. According to Deci, when an intrinsically motivated behavior is accompanied by external contingencies perceived as controlling, intrinsic motivation will be undermined. On the other hand, if feedback is provided, as in the case of a verbal reward, intrinsic motivation will be enhanced. Conversely, feedback that provides feelings of incompetence are said to be de-motivational (Deci & Ryan, 1985) and will undermine intrinsic motivation as a result.

The process thought to occur is one of personal attribution. According to Deci and Ryan (1980), a requirement for the undermining effect is a change in a person’s perceived locus of causality from internal to external. That is, to what do people attribute their behavior, themselves or some external contingency? The phenomenon of cognitive dissonance (Festinger, 1957) may help to explain this attribution issue.

Seminal Research

In a classic study, Festinger and Carlsmith (1959) demonstrated that subjects who were paid one dollar to deceive a confederate (by claiming a boring experimental procedure included fun and enjoyable tasks) were more likely to report the boring tasks were, in fact, interesting as compared to subjects who were paid 20 dollars or controls who were not asked to deceive the confederate. Festinger and Carlsmith claimed that engaging in a behavior discrepant with a previously held attitude creates an inconsistency or dissonance within an individual. As such, the individual, in an attempt to achieve
consistency (Cialdini, 1993), is likely to feel a need to reduce the conflict or dissonance. And, since the behavior had already occurred, Festinger and Carlsmith suggested that this reduction would manifest itself in the form of attitude change. Interestingly, however, the effect only occurred in subjects who were paid one dollar.

Festinger and Carlsmith explained their findings according to the social psychological principle of discounting. That is, one dollar was not enough for subjects to justify their behavior on the monetary inducement, and as a consequence, they did not have an external justification for their behavior. This resulted in an internal locus of causality (“I thought the task was interesting”) for deceiving the confederate. Subjects in the 20 dollar condition, however, were able to discount their discrepant actions on the external contingency (“I did it for the money”) and therefore no attitude change ensued.

**Changing Locus of Causality**

In relating the theory of cognitive dissonance to intrinsic motivation theory, it is important to note that one dollar was just enough to entice subjects in the Festinger and Carlsmith (1959) study to engage in a discrepant behavior without providing an external justification for this behavior. This led to a change in the locus of causality from external to internal (“I engaged in the task because it was part of an experiment” to “I actually enjoyed that task”) and caused subjects to report that an uninteresting task was interesting. Essential for this effect to occur is the perception of choice (Festinger, 1957). This is called the “minimal justification effect” (Lepper & Greene, 1975). Conversely,
the change in locus of causality observed in studies of intrinsic motivation is from
internal to external. That is, subjects are exposed to an initially interesting task (not a
boring one) and are provided with a contingency powerful enough to allow for an
external justification.

The shift in locus of causality from internal to external manifests itself in that
subjects report the initially interesting task is less interesting ("I enjoy this task" to "I
didn't enjoy it that much, I did it for the money") once the external contingency is
removed. This is tantamount to the 20-dollar condition in the Festinger and Carlsmith
study and is known as the "overjustification effect" (Lepper, Greene, & Nisbett, 1973).
Such an explanation fits nicely with the Cooper and Fazio (1984) reconceptualization of
dissonance theory as one not of inconsistency, but rather of self-justification. When
powerful external contingencies are provided, people are given an alternative justification
for their behavior. This is evidenced, as in the example above, when people justify their
behavior not on an internal desire or enjoyment (intrinsic motivation), but on an external
consequence.

As mentioned previously, not all external contingencies will change a person's
locus of causality. Deci (1971) reported that insufficient external rewards (minimal
justification) may even increase intrinsic motivation, or strengthen the internal locus of
causality. It was also noted earlier that a necessary component for a change from an
internal to external locus of causality is that the external contingency be perceived as
controlling (Deci, 1972b). As such, Deci has noted that external contingencies such as
positive verbal feedback may have an additive effect with intrinsic motivation because such feedback may be equated with internal feelings of satisfaction and consequently the value of the behavior increases (Deci, 1972b). The point is, that intrinsic motivation research is much more complex than the simple conception that if you pay people for a task they would naturally perform, they will stop emitting the behavior once payment is withdrawn.

External Contingencies

There are many types of external contingencies. Some contingencies may enhance intrinsic motivation, even when combined with a sufficient monetary reward. In addition, the timing of the reward may also be crucial (Deci, 1972b). More recent conceptualizations consider the degree of perceived choice to be the most important variable in intrinsic motivation (Rigby, Deci, Patrick, & Ryan. 1992). These authors urge that we move away from an intrinsic-extrinsic dichotomy.

Rewards, when in place, have consistently been shown to increase the rate of a target behavior. In fact, large-scale behavior change processes have often used reward strategies. In a review of numerous employer-based programs to motivate vehicle safety-belt use, Geller, Rudd, Kalsher, Streff, and Lehman (1987) compared the short-term and long term effects of several behavior change techniques. The results of their review demonstrated the immediate and long-term intervention effects were greatest for programs which did not use extrinsic rewards. Furthermore, although incentive/reward
programs created belt use which was substantially above baseline during intervention and immediately after withdrawal of the rewards, follow-up data showed belt use had substantially decreased to near baseline levels, and in one case below baseline levels. Geller et al. concluded that intermittent introductions of incentive/reward programs are necessary for long-term effectiveness. These findings are consistent with the theories of intrinsic motivation and "overjustification."

With all of the intervention techniques available to applied psychologists, deciding which technique to use in a particular situation is a challenge. Additionally, understanding when and how external contingencies will undermine intrinsic motivation in an applied setting has not been thoroughly investigated (Wiersma, 1992). The present study tested intrinsic motivation in a community setting. Also investigated were the effects of combining rewards with commitment and reward timing.

**Literature Review**

**The Cognitive Perspective**

**Effects of Rewards.** The classic cognitive studies of intrinsic motivation have generally examined the effects of monetary rewards or verbal feedback on a subject's interest to engage in a particular task. One of the traditional paradigms (e.g., Deci, 1971) employed an A-B-A reversal design in which baseline measures were taken, the intervention implemented, and withdrawal of the intervention ensued. Each session was conducted on a different day.
The intervention consisted of rewarding subjects for engaging in a target activity. Control subjects received no pay. Interestingly in each session, a free-choice period occurred (during which the experimenter left the experimental room). During this free-choice period, subjects were told they could do whatever they wanted. There were activities other than the target task available for subjects to engage in. The primary measure of motivation was time spent at the target activity during each of the three free-choice periods. A comparison of the time subjects spent engaged in the target task during the baseline free-choice period and the withdrawal free-choice period was used as the dependent measure of intrinsic motivation. That is, if time spent during the first free-choice period was greater than the time spent during the third free-choice period, and the same analysis for the control group showed no significant change, then it was concluded that intrinsic motivation had been undermined in the experimental group (Deci, 1971).

Many later studies of intrinsic motivation employed a single session B-A design (e.g., Deci, 1972b) in which only between subjects comparisons could be made. Not taking baseline measures of intrinsic motivation has been a major criticism of this line of research (Flora, 1990). In addition to a behavioral measure of intrinsic motivation, subjects were usually given a self-report questionnaire which assessed their interest in the target activity.

In a classic series of three studies, Deci (1971, Experiment 1), paid some subject’s and not others for engaging in a puzzle-solving task. Intrinsic motivation was assessed by the number of seconds subjects engaged in puzzle-solving during the free-
choice period. Results demonstrated that subjects paid for their puzzle-solving increased their time spent at task while the intervention was in place. However, once the contingency was withdrawn, paid subjects engaged in the task significantly less than during baseline. Self-report measures of task interest did not yield a significant result.

Experiment 2 replicated Experiment 1 in a field setting.

Experiment 3 is noteworthy because instead of monetary rewards, experimental subjects received verbal rewards. These rewards were either generic: “That’s very good,” or they provided feedback: “That’s much better than average...” (Deci, 1971, p. 112). Results from the free-choice measure of intrinsic motivation showed that time spent puzzle-solving increased for the experimental group which received both verbal reinforcement and positive feedback. Verbal rewards alone did not enhance intrinsic motivation significantly. Unlike Experiment 1, no self-report measures were taken.

A couple of criticism can be made about the Deci (1971) studies. First, in Experiments 1 and 3, the measure of whether or not a subject was engaged in puzzle-solving was not well operationalized. As the operational definition of task engagement included such loose connotations as just looking at or manipulating a piece of the puzzle, no objective behavioral measure of puzzle-solving, a seemingly cognitive task, could be obtained. For all the experimenters knew, a subject occupying himself in another available task may have indeed been puzzle-solving although not overtly. Furthermore, simply manipulating a piece of the puzzle can not necessarily be taken to indicate puzzle-solving. In essence, the cognitions of the subject were neglected in Deci’s
operationalization of task engagement. As such, it may be concluded that puzzle-solving is not the ideal activity with which to study intrinsic motivation. Second, no mention of random assignment of subjects to groups was made in any of the three studies. As such, the results become suspect as they may be contaminated by individual differences in the ease at which the perceived locus of causality can be manipulated.

In a follow-up to the 1971 studies, Deci (1972a) reviewed some additional research (e.g., Deci, 1972b) which included the use of a punishment contingency and non-contingent rewards in a B-A one session paradigm. Non-contingent payment did not affect intrinsic motivation when compared to a no treatment control, while threats of punishment and negative verbal feedback both decreased intrinsic motivation. Deci (1972a) concluded that contingent monetary rewards, punishment, and negative feedback undermine intrinsic motivation while verbal rewards and positive feedback enhance intrinsic motivation. Non-contingent monetary rewards were reported to have left intrinsic motivation unchanged.

Other moderating variables. To this point it has been mentioned that contrived contingencies must possess specific characteristics in order to undermine intrinsic motivation. Rewards must be: 1) perceived as controlling and not offer positive feedback, and 2) contingent upon task performance. Rewards must also be powerful enough to shift the locus of causality from internal to external. This is the essence of “overjustification.” Two other important moderators are that the contingent reward must be expected in advance, and delivered after task completion.
In another classic study, Lepper, Greene, and Nisbett (1973) demonstrated that if a reward for task completion is unexpected, intrinsic motivation will not be undermined. Subjects were randomly assigned to one of three experimental conditions: 1) Expected Reward condition—children were told in advance they would receive a material reward for engaging in the target activity, 2) Unexpected Reward condition—subjects engaged in the same activity and received the same reward, but without prior knowledge they would receive the reward, and 3) the Control condition in which subjects neither expected nor received the reward. As predicted, once the contingency had been withdrawn subjects in the Expected Reward condition engaged in the target activity significantly less than the comparison groups.

The Unexpected Reward and Control groups did not differ significantly from each other (Lepper et al., 1973). This result is not surprising because in the Unexpected Reward condition, subjects still chose to engage in the target activity out of their own volition. When the contingencies are not known in advance, subjects have no explicit opportunity to attribute their task engagement as a means of obtaining an external reward, and thus the necessary controlling aspects of the contrived contingencies are absent. The current study offered subjects material rewards prior to task engagement as part of two interventions.

In all of the studies presented thus far, intrinsic motivation has been undermined only in those subjects who were offered rewards prior to target task engagement, and received them after completing the target activity. In a study which follows-up on the
Lepper et al. (1973) study, Croll and Smith (1984) manipulated the timing of the reward offer. These investigators offered a reward to school children either before or after they agreed to engage in a drawing activity. A no treatment control group was used for comparison. Results indicated that promised rewards undermined intrinsic motivation regardless of whether they were offered previous to or after a subject's commitment to engage in the target activity. It is interesting to note that this pattern of behavior appeared to hold only for those subjects who exhibited an initial high level of intrinsic interest.

The current research manipulated the timing of reward delivery. Some subjects received their reward prior to engaging in the target activity, and others were promised a reward for successfully completing a specified task criterion.

**Equity Theory.** Deci (1972b) addressed the issue of reward timing in relation to equity theory (Adams, 1965). Equity theory asserts that in every social interaction, individuals will evaluate the amount of inputs (what is invested into the interaction) and outputs (what is received from the interaction) and attempt to balance these. Inequity, whether it be to one's advantage or disadvantage creates tension. Individuals will attempt to restore equity in order to reduce this tension (Adams, 1965). Adams claimed that this reduction could occur by either increasing inputs or decreasing outputs (if the inequity is advantageous), or reducing inputs or increasing outputs (if the inequity is disadvantageous). The former situation applies to intrinsic motivation theory as discussed by Deci (1972b).
Examined in the Deci (1972b) study are both monetary and verbal rewards, the combination of the two, and the time at which they are delivered. Of interest in this study was the time of monetary reward delivery (before or after the free choice period). If Deci's (1972b) conceptualization is correct, then those subjects delivered money before the free-choice period should feel an inequitable situation to their advantage (Deci, 1972b). As a result, equity theory would predict that because subjects can not decrease their outputs (the money has already been delivered) they should increase their inputs (i.e., spend more time at the target activity during the free-choice period) as compared to those who were compensated after the task and the no treatment controls. Results of the study supported this hypothesis as subjects rewarded with money in advance spent significantly more time engaged in the target task during the free-choice period.

Conclusions. The study of intrinsic motivation is far more complex than the simple notion that externally mediated rewards undermine one's intrinsic motivation to engage in a target activity. The contingencies must be perceived as controlling. Certain variables must exist for such an effect to occur. These variables include: 1) the contingencies provide no positive feedback, 2) the external consequence be sizable and expected prior to task engagement, 3) the consequence be presented after task engagement, 4) initial interest in the activity be relatively high (Fazio, 1980), and 5) such variables not occur in certain combinations.

It should also be noted that contingencies other than reward strategies have been shown to undermine intrinsic motivation. These contingencies include threats of
punishment (Deci, 1972a), surveillance (Lepper & Greene, 1975), and externally imposed deadlines (Amabile, Dejong, & Lepper, 1976). Additionally, a recent meta-analysis of the intrinsic motivation literature (Wiersma, 1992) suggested that the data collected in free-choice measures of intrinsic motivation do not converge with data obtained from self-report measures of task interest. Thus, it was claimed that such operational definitions of intrinsic motivation may tap different constructs and should not be used interchangeably (Wiersma, 1992). Some evidence for this point occurred in the Deci (1971) studies in which the behavioral measure of intrinsic motivation yielded a significant result, and the self-report measure did not.

Other criticisms may be leveled at the traditional studies of intrinsic motivation, the most notable being broad definitions of task engagement, and the hesitation to take baseline measures. Furthermore, any attempt to generalize findings from a controlled laboratory environment to settings in which many more variables can interact with the treatment (i.e., the contrived contingencies) must be qualified. Such issues need to be addressed before evidence that extrinsic contingencies undermine intrinsic motivation can be considered anything more than inconclusive, and unique to the study in which it was reported. A conceptualization of intrinsic motivation from a perspective other than cognitive psychology may help to resolve some of these issues.
The Behavioral Perspective

Natural versus Contrived Reinforcers. Behavior analytic theory proposes that responses are shaped and maintained by the consequences which follow them (Skinner, 1953; 1971). As such, the behavioral definition of intrinsically motivated behaviors differs from that of the cognitive definition. Most notably, behaviorists acknowledge that many responses are followed by natural consequences which result from simply operating on the environment. Horcones (1987) made a distinction between these natural consequences and consequences provided by some external agent, the latter being called contrived consequences (Skinner, 1953). Such a conceptualization allows the behavioral researcher to avoid the construct of intrinsic motivation and account for the maintenance of a behavior through external events (Flora, 1990). Intrinsically motivated behaviors, therefore, become those which are maintained by consequences naturally inherent to the task, as when a musician performs because of the sounds produced on his instrument. In conceptualizing intrinsic motivation in this manner, different interpretations of the intrinsic motivation data become possible, and as a consequence, different predictions are inevitable. Let’s first consider how extrinsic reinforcers may be used effectively to bring an individual into contact with the natural consequences of performing a particular response.

Consider the example of the musician mentioned above. At one point in time, this accomplished musician was unable to produce the reinforcing sounds that he now produces. As a result, it is quite probable that some external schedule of reinforcement
was arranged in order to maintain his practice behavior which, through successive approximations, would eventually produce natural reinforcing consequences. As the musician gets more skilled, functional control of his behavior invariably switches to the natural consequences of producing music. External contingencies could then be withdrawn, and according to reinforcement theory, the behavior should be maintained. This would demonstrate the functional control of the environmental stimuli (Flora, 1990) associated with the natural consequences of music playing. In a professional setting, monetary rewards are likely be perceived as signaling competence and thus an additive effect should occur. The result is that the musician will play more frequently when both natural and external consequences are produced by his behavior.

The Matching Law. Flora (1990) offered a behavioral matching law (Herrnstein, 1970) analysis to explain the results reported in many studies of intrinsic motivation. The matching law states that relative rates of responding will match the relative rates of reinforcement produced by those responses (Catania, 1992). As such, reinforcement theory would predict, that once a schedule of reinforcement is made more dense by providing external reinforcement for those responses, responding should increase. This effect is typically seen in the traditional studies of intrinsic motivation.

The matching law would also predict, however, that once the contrived contingencies have been withdrawn, response rates should decrease only to baseline levels. As noted previously, however, cognitive theorists have reported that responding drops and remains below baseline levels. From such an effect they infer that intrinsic
motivation has been permanently undermined (Deci & Ryan, 1985). From the behavioral perspective, therefore, this would imply that the natural consequences of the behavior have somehow lost their reinforcing properties, or at a minimum are not as powerful as they once were (Flora, 1990).

**A Loss of Reinforcing Effectiveness.** The issue of natural consequences losing their reinforcing effectiveness was addressed by Dickinson (1989). She claimed that the mere repetitious exposure to natural reinforcers, due to an increase in responding because of contrived contingencies, may produce fatigue. She likened this phenomenon to an individual’s habituation to sensory stimuli. As Mawhinney (1990) pointed out, the mere act of purchasing a nice piece of art may not in itself be naturally reinforcing, but looking at it is. Vision is stimulated by sensory stimuli.

As noted previously, a primary premise in cognitive theories of intrinsic motivation is that contrived contingencies be perceived as controlling. Traditionally, behaviorists (e.g., Skinner, 1953; 1971) have claimed that controlling contingencies will be met with countercontrol. Although Skinner’s main emphasis in discussions of countercontrol were the effects of punishment contingencies, Dickinson (1989) noted that when rewards are used to “induce people (especially children) to engage in non-preferred activities...offers of rewards may become conditioned aversive stimuli” (Dickinson, 1989, p. 6). As such, it follows that individuals may respond to certain reward contingencies with the same countercontrol produced by punishment contingencies. The behavioral manifestation is one of refusing to engage in a task as a means of reacting against the
producer of the controlling contingencies (Dickinson, 1989). Such a phenomenon has also been called psychological reactance (Brehm & Brehm, 1981) and results from perceived threats to freedom and dignity (Skinner, 1971).

An additional assumption made by researchers of intrinsic motivation, is that the target activity is naturally interesting to the participants in the study. Since individual differences in task interest are bound to exist, a between-subjects group design with random assignment is generally employed for control (Dickinson, 1989). What is lost in such a design is that the results are not representative of any single individual’s performance (Sidman, 1960). Dickinson (1989) claimed that studies of intrinsic motivation which have used a within-subjects design have failed to produce the detrimental effects of external rewards. This is noteworthy because the undermining effect is a within-subjects phenomenon.

The cognitive paradigm is also flawed in that behavior is generally not measured repeatedly over time. Consequently, it is impossible to get a true representation of post-treatment behavior (Flora, 1990). According to Flora, the rate at which the target behavior is emitted, in addition to other responding, should be continuously recorded. He claimed when this is done, a matching law analysis would demonstrate the target behavior is under the stimulus control of the experimenter, and other available activities under the (normal) stimulus control of the instructor, not some unobservable construct called interest (Flora, 1990).
An Experimental Analysis of Intrinsic Motivation. Mawhinney, Dickinson, and Taylor (1989) used concurrent schedules in a within subjects A-B-A design to perform an experimental analysis of intrinsic motivation. This study differed from the traditional paradigms in that single subject data was recorded, and subjects were able to choose a preferred task. In addition, subjects had available to them, during all three phases of the study, a (boring) lever pull task with which they could earn money on a variable interval ten second schedule of reinforcement. This task was included to determine the extent to which the alternative tasks (video games) were interesting. During the intervention phase, subjects were offered two cents per game played to perform their preferred task. To maximize their earnings, subjects would have to disregard the quality of their play (Mawhinney et al., 1989). The dependent measures included the total time spent on each task. The data demonstrated that all subjects increased the time spent on the preferred task during intervention and that time spent during withdrawal did not differ significantly from time spent during baseline. For the one subject who did show a post intervention decrement, responding returned to baseline levels prior to the conclusion of the study. These results are consistent with a matching law analysis.

Conclusions. The discipline of behavior analysis defines intrinsic motivation in terms of the natural consequences of responding and their associations with environmental stimuli. The construct of motivation as advocated by cognitive scientists is therefore precluded. In any environment stimuli exist which signal to the organism that a reinforcer is available provided that a certain response is made. These are called
discriminative stimuli and are said to have functional control of a particular behavioral response. Instructions in a classroom, and an experimental manipulation can assume these discriminative properties (Flora, 1990). Since all of the activities available to a participant in an intrinsic motivation study can be considered part of a single response class, verbal experimental manipulations which promise rewards for engaging in a target activity will alter the schedule of reinforcement for all activities in that response class. As such, when intrinsic motivation is considered in terms of functional control and the three-term contingency of behavior analysis, a behavioral matching law analysis can account for the results reported in many studies of intrinsic motivation. Finally, to neglect baseline data, or to group data together in a between-subjects design is an inherent problem with cognitive studies of within subjects changes in intrinsic motivation. A within-subjects design can yield strikingly different results. The current study used a within-subjects design to study the effects of external rewards and commitment on intrinsic motivation in a community setting.

**Commitment Strategies**

Opponents of interventions which use extrinsic rewards to solicit compliance often advocate strategies in which such contingencies are not arranged. One of the more widely used compliance techniques is that of asking people to make a formal commitment to engage in a target behavior. Commitment strategies have gained
popularity because they effectively induce compliance in the absence of obvious external pressure (Cialdini, 1993).

Freedman and Fraser (1966) reported a commitment strategy in which they found that people who were first willing to comply with a small request were more likely to comply with a later larger request than were subjects just asked to comply with the larger request. According to Freedman and Fraser (1966), this compliance strategy, known as the Foot-in-the-Door (FITD) technique, garnished its effectiveness because it caused an attitude change in which a participant’s self-image was changed to reflect that he was actually a certain type of individual. Cialdini (1993) noted, however, that in order for such an attitude change to occur, the commitment technique must be “active, public, effortful, and freely chosen” (p.64).

Strong outside pressure such as contrived contingencies should be avoided when using a commitment strategy or it is quite possible that the attitude change mentioned by Freedman and Fraser (1966) will not occur. These issues are directly related to the notions of minimal justification in cognitive dissonance, and the overjustification effects which have typically been used to account for the undermining of intrinsic motivation. Commitment strategies must be structured so that the target of the intervention does not have a source of attribution for his behavior other than himself. If the technique is successful, only self-attributions will be possible, dissonance will be aroused, and dissonance reduction will occur in the form of an attitude change towards a position which advocates the terms of the commitment. It has been noted (e.g., Cialdini, 1993)
that written commitments are more effective than verbal commitments because of the
greater effort exerted in written commitments.

**Written Commitments.** Written commitments have been used alone and in
combination with other contingencies in an attempt to influence many different
behaviors. They have been effective in increasing: 1) safety belt use on a university
campus (Geller, Kalsher, Rudd, & Lehman, 1989) and among pizza delivery drivers
(Ludwig & Geller, 1991), 2) the use of personal protective equipment in industry (Streff,
Kalsher, & Geller, 1993), 3) adherence to a medical regime (Putnam, Finney, Barkley, &
Bonner, 1994), and 4) community recycling (Katzev & Pardini, 1987). Some cognitive
theorists would argue, however, that if used in combination with another intervention, the
additional intervention could undermine the perception of choice and as a result
intervention effectiveness will be compromised.

In their review of 28 different employer based programs to motivate safety-belt
use, Geller et al. (1987) concluded that long-term intervention effectiveness was greater
for programs which did not use extrinsic rewards. In addition, they found that pledge
card commitment strategies were most effective.

Katzev and Pardini (1987) examined the effects of written commitments in the
context of encouraging recycling behaviors. This study involved three experimental
groups and a no treatment control. They investigated the effects of a written commitment
only strategy, rewards only, and written commitment plus rewards in combination. The
commitment manipulation involved signing a pledge to recycle and the rewards consisted
of tokens (which could be exchanged for merchandise) delivered each time a household recycled. The current study also used commitment only and written commitment plus reward manipulations.

The dependent measures used by Katzev and Pardini included frequency and amount (measured in weight) of recycled materials. Results indicated that during intervention, all treatments were uniformly effective. However, during follow-up the commitment plus reward condition was the most effective intervention. These results were obtained by measuring the amount of recycled material. Such a measure could be confounded, however, due to different amounts of recyclable material produced by each household. In the more sensitive measure of frequency, however, the commitment only strategy was superior. Interestingly, follow-up data showed that the control group recycled more frequently than the reward only group. These data support the theories of intrinsic motivation and parallel the conclusions drawn by Geller et al. (1987).

Katzev and Pardini concluded that it did not appear the rewards they used were powerful enough to undermine the commitment to recycle, but in the absence of the commitment strategy, tokens had an undermining effect. It is noteworthy, that subjects in the reward only condition redeemed 75 percent of their tokens, whereas those in the commitment plus reward strategy redeemed only 25 percent of their tokens. It seems the commitment to recycle was a more powerful motivator of behavior than the reward contingency (Katzev & Pardini, 1987). It is unfortunate that these researchers did not take baseline data, as this would have made the design more powerful.
In the study just described, rewards were delivered contingent on emitting the target response. In another study, Geller, Kalsher, Rudd, and Lehman (1989) also combined written commitment and reward. A notable difference in this design, however, was that the rewards were not contingent on emitting the target behavior (safety-belt use). Rather the opportunity to receive a reward (in the form of a raffle ticket) was provided for signing a pledge to use a safety-belt. The rationale behind the design was to solicit pledge signing in an efficient cost effective manner (by providing a remote reward possibility) without undermining the intrinsic motivation to actually engage in the target behavior.

The study was conducted on a large university campus. Subjects included students, faculty, and staff of the university. Pledge cards were distributed by placing them under the windshields of cars in the school parking lots and at various sites located throughout campus. The pledge cards were color coded so that the most effective mode of distribution could be evaluated. The card was designed so that a portion of the card could be returned for entry into the lottery, with the other portion capable of being displayed on the rearview mirror of the participants vehicle as a salient reminder of their commitment. The intervention consisted of a “pledge card lottery” in which the pledge cards were distributed and ten winners chosen for each of three weeks. Results indicated that pledge card signing was effective in increasing safety belt use significantly above baseline for faculty, staff, and students when compared to belt use by pledge nonsigners.

The results reported by Geller et al. (1989), are consistent with the notion that the
use of low value incentives, in combination with a low probability of winning a reward will preclude extrinsic control and support the development of intrinsic motivation (Geller et al., 1989) through the principles of consistency and minimal justification.

Conclusions. Commitment strategies have been used in a variety of settings to increase desired behaviors. The most effective commitments are those which provide the perceptions of choice, and consequently an internal locus of causality. Written commitments are more effective than verbal commitments because of the response effort required and gain their effectiveness because of the principle of consistency. If commitment strategies are combined with other intervention techniques precautions must be taken to ensure that the perception of choice to make the commitment is not undermined. In the absence of such precautions, targets of commitment interventions may be able to attribute their behavior to an external source and as a result, once the intervention is terminated, rates of behavior will return to or fall below baseline levels. Care should be taken to record and report baseline data in any examination of commitment strategies. The current study carefully followed these guidelines for effective written commitment intervention.

A Model of Actively Caring

The Actively Caring (AC) model (Geller, 1991; Geller, Roberts & Gilmore, 1993) was originally developed as a model of proactive helping behavior. This differs from the standard conception of altruism which has been studied predominantly in staged crisis
situations (e.g., Isen & Levin, 1972) and is therefore reactive in nature. Put simply, AC refers to an individual “going beyond the call of duty” to help another person or protect the environment. According to the AC model, five transient person states (self-esteem, self-efficacy, personal control, optimism, and belongingness) predict the likelihood that an individual will emit AC behaviors. The authors presume a positive relationship between one’s scores on these measures and propensity to emit AC behaviors. That is, individual’s scoring high on these measures will be more willing to go beyond the call of duty to help another person or protect the environment. As such, the Actively Caring Survey (ACS), a self-report measure, has been developed to measure these person states. Roberts and Geller (1995) reported research supporting this model in which the number of actively caring thank-you cards given or received for AC behaviors was counted and data correlated with subjects’ scores on the ACS. Results partially supported the hypothesis that those more likely to give or receive thank-you cards would score higher on the AC person states. The current research used thank-you cards as the target behavior and also measured the five AC person states with the ACS.

The original ACS contained 115 items but has since been revised (Geller, Roberts, & Gilmore, in press). The ACS used in the present research was refined to reflect a college population in the 1990’s and contained 58 items. Each subscale of the measure was adapted from measures firmly established in the literature. Specifically, the ACS subscales were adapted as follows: self-esteem (Rosenberg, 1965), self-efficacy (Scherer et al., 1982), optimism (Scheier & Carver, 1985), personal control (Nowicki &
Duke, 1974), and belongingness (Wheeless, Wheeless, & Dickson-Markman, 1982).

Internal consistency scores for the ACS subscales were established in an industrial setting (Geller, Roberts, & Gilmore, in press) and R’s ranged from .75 to .88. Roberts and Geller (1995) also reported a significant positive relationship between scores on the ACS and participants’ self-reports of willingness to actively care for the safety of others. A regression analysis indicated that scores on the self-efficacy, belongingness, and personal control subscales of the ACS were most reliable in predicting self-report measures of AC behaviors. A recent study (Buermeyer, Rasmussen, Roberts, & Martin, 1994) found that blood donors scored higher on the ACS subscales than did a control group of blood non-donors. Consequently, validation for the AC model has been established and the predictive utility of the ACS in community and industrial settings demonstrated.

**Summary**

Cognitive and behavioral theories make different predictions about the effects of rewards on motivation to engage in a behavior. Some of these differences exist because the two disciplines operationally define intrinsic motivation differently. Cognitive theorists refer to intrinsic motivation as an internal need or desire to perform a task. Behavior analysts, on the other hand, refer to intrinsically motivating behaviors as those which produce naturally reinforcing consequences. As such, behavior analytic theories consider intrinsic motivation by means of the stimulus-response-consequence
contingency, and can account for the effects reported in studies of intrinsic motivation by performing a functional analysis thus attributing stimulus control to some environmental event.

Not all external contingencies are rewards, and not all rewards undermine intrinsic motivation. As such, certain conditions must be met. Most importantly, the external contingencies must be perceived as controlling by the target of the intervention. Second, if a reward contingency is used, it must be a) expected in advance, b) sizable enough to arouse dissonance and a subsequent cognitive re-evaluation of the causal factors for engaging in the behavior, and c) not provide positive performance feedback. Thus, it should be possible to design reward systems which will not undermine intrinsic motivation.

Commitment strategies are effective in inducing compliance in the absence of obvious external pressure. The most effective strategies allow for the perception of choice and as a result may induce attitude change congruent with the terms of the commitment. The most effective commitment strategies are public and written. One form of effective written commitment for large scale behavior change is the signing of pledge cards. Pledge card signing can be combined with other forms of intervention techniques to increase the probability the pledge will be signed and not lose its effectiveness. These additional intervention techniques should not be perceived as coercive. Lottery drawings for relatively inexpensive prizes meet this criterion.
People are said to actively care if they go beyond the call of duty to help another person or care for the environment. Empirical evidence is building to demonstrate that five transient person states are effective predictors of who will emit AC behaviors. As the involvement of community members in a large scale intervention is essential, a particularly pertinent application of the AC model is to aid in the enrollment and maintenance of community intervention agents. The current study used this backdrop in its test of intrinsic motivation theory.

Most studies of intrinsic motivation have been conducted in controlled laboratory settings, and consequently the generalizability of the findings is suspect. The current research was conducted in a university community and thus differs from many other intrinsic motivation studies in this respect. In addition, extrinsic rewards and commitment strategies were combined differently than in previous studies of either commitment or intrinsic motivation. As in Geller et al. (1989), extrinsic rewards were used to increase pledge signing. Additionally, pledge signing was combined with a criterion contingent reward which was certain if the terms of the pledge were met. To study the effects of reward timing and combining these strategies, a pledge card only intervention was used, as was a no treatment control group.

**Hypotheses**

There were two primary purposes to the current study. The first was to study the effects of different intervention strategies on the intrinsic motivation of individuals to emit
actively caring (AC) behaviors in a community setting. The second was to predict, using the AC survey (ACS), who would be most likely to emit the target response defined as AC. As reviewed above, the literature on intrinsic motivation suggests the following hypotheses.

**Short-Term Effects**

Hypothesis 1.1: Combining pledge card signing with a contingent reward for the target behavior will yield the greatest increase above baseline in the target behavior during intervention.

Hypothesis 1.2: A pledge only intervention will increase behavior above baseline during intervention, but to a lesser degree than pledge combined with contingent rewards.

Hypothesis 1.3: Combining pledge-card signing with a reward contingent on pledge signing will decrease the rate of the target behavior below baseline.

**Long-Term Effects**

Hypothesis 2.1: Once the contingencies have been withdrawn, combining pledge card signing with contingent rewards will have the most detrimental effect on the rate at which the target behavior is emitted.

Hypothesis 2.2: Once the contingencies have been withdrawn, the rate of the target behavior will return to baseline levels for two intervention groups-- pledge card only and pledge card combined with non-contingent rewards.

**The Actively Caring Model**

Hypothesis 3.1: Subjects’ scores on measures of self-esteem, belongingness, optimism, personal control, and self-efficacy will be effective predictors of individual
variation in the rate at which AC behaviors are emitted. More specifically, subjects scoring higher on these measures will emit more of the target AC behavior than subjects scoring lower on these measures.

To test these hypotheses, a within-between A-B-A reversal design with a no-treatment control group was employed.

**Method**

**Subjects and Setting**

Subjects were undergraduate psychology students at Virginia Polytechnic Institute and State University. They were recruited by placing four separate experiment sign-up sheets in the fifth floor lobby of Derring Hall (the psychology department). Subjects were randomly assigned to one of the four experimental groups by choosing one of the four identical sign-up folders previously established as a particular experimental condition by drawing numbers from a hat. Each sign-up sheet contained the same generic description of the experiment and included a list of dates that the subject must have been available in order to participate in the study. **Appendix A** includes the information contained in the sign-up folder.

Subjects met as a group with the experimenter (the author) or a trained research assistant three times throughout the spring semester. Extra credit in a psychology class was given to subjects in the following manner: 1 point for attending each of the first two meetings, and 2 points for attending the third. As such, a total of four extra credit points was possible for completion of the entire experiment. This particular method of
assigning extra credit points was an effort to prevent attrition while still rewarding subjects for the portion of the study they did complete.

Although the original pool of subjects was 68, (40 females and 28 males) with a mean age of 19.6 (range = 18 to 23 years), attrition was a problem. This was not surprising as subjects were asked to make a semester long commitment to this one study. The final pool of subjects consisted of 27 females and 14 males with a mean age of 19.5 (range = 18 to 23 years). This amounts to a total attrition rate of almost 40 percent.

Procedure

Session 1: Baseline. Early in the spring semester, after having obtained human subjects committee approval, the first meeting of each experimental group occurred. All subjects were treated identically at the first meeting of each group. Upon arriving at the experimental site, a classroom on the university campus, subjects were greeted by the experimenter. While subjects signed informed consent documents, the author briefly described the purpose of the study. A cover story was offered so as to keep subjects naive to the true purpose of the study. Appendix B contains a transcript of the entire dialogue read to subjects during Session 1.

After having signed the informed consent forms, all subjects were given a demographic questionnaire and a survey to measure self-esteem, belongingness, optimism, personal control, and self-efficacy (see Appendices C and D). The survey was refined slightly from the original used by Roberts and Geller (1995) to fit a student population in the 1990's. In addition, items were added to assess directly respondent's willingness to actively care.

Immediately after the testing sessions, subjects were issued perforated "thank-you" cards which they were asked to give out to anyone they felt had "gone beyond the
call of duty" to help another person or care for the environment. At the same time, subjects were provided with examples of AC behaviors and were asked to come up with some examples of their own. Furthermore, the protocol for completing the thank-you card and returning a portion of it to the psychology department was thoroughly described. Participants were asked to use the cards over the following three weeks. Each subject was issued 30 thank-you cards. In addition, subjects were told that if they ran out of cards, they could obtain more by stopping by 5100 Derring hall, in the psychology department.

Figure 1 depicts the "thank-you" card and shows a space to acknowledge the behavior thanked, the location to which the card should be returned or mailed, the subject identification number, card number, and the Actively Caring logo. The card was designed to be colorful and attractive so the recipient of the "thank-you" may be tempted to show it off to others in the community or display it in some manner.

The cards were tracked by asking subjects to return a portion of the card which contained the last four digits of their social security number and a unique card number to a drop box placed outside Derring 5100 or by mailing this portion of the card to the address printed on it. Subjects were asked to return any card they had used within 48 hours of its completion or at a minimum within one week after it had been given to the recipient. The other portion of the card was that which was to be handed to the recipient of the "thank-you."
Each card was numbered sequentially. Each experimental group was given a specific range of cards numbered unique to their condition (i.e., subjects in the Rewarded Response Group were issued cards numbered from 1000 to 1999, the Commitment Only group received cards numbered from 2000 to 2999, the Rewarded Commitment Group was issued cards numbered 3000 to 3999, and the Control Group received cards numbered 4000 to 4999).

A brief motivational speech (see Appendix E) followed the distribution of the "thank-you" cards. Upon completion of the motivational speech, subjects were thanked for their participation, given an appointment card which indicated the date and location of their next session, and then excused for the evening.

Session 2: Intervention. On the weekend prior to the intervention phase of the study, subjects were contacted by telephone and reminded of their second appointment in the "Actively Caring Thank-You Study." A trained research assistant read from a script (see Appendix F) which contained the information to be conveyed to the subject. If the subject did not answer the phone, the research assistant did not initially leave a message. Instead a second attempt was made to contact the subject personally at a later time. If the subject did not answer at this time, and if it was possible, the research assistant left a message with either a roommate or on a recording machine. Due to time constraints, no attempt was made to contact any subject a third time. Approximately 85% of the subjects were successfully contacted and reminded of their appointment.

During Session 2, subjects in each experimental group were gathered for separate meetings in an attempt to increase their use of the "thank-you" cards. Upon arrival at the experimental room, subjects were greeted by the experimenter (the author) who took care to assure all subjects had participated in Session 1 and were at the correct meeting time for their experimental condition. Then, all completed thank-you cards (which had not
been returned prior to Session 2), and all unused thank-you cards were collected. Subjects were then re-read the cover story (refer to Appendix B) and asked if they had any questions or comments. With the exception of the following, all other aspects of Session 2 were identical to the procedures followed in Session 1. Appendix G contains the dialogue followed with each experimental group.

The experimental conditions were as follows: 1) **Commitment Only** (CO) -- subjects were asked to sign a promise card to become an “Actively Caring Agent,” 2) **Rewarded Commitment** (RC) -- subjects were asked to sign the same pledge as in CO, but were told in advance that for signing the pledge they would receive, as a reward, an attractive t-shirt and insulated travel mug which displayed the Actively Caring logo (subjects were shown the t-shirt and mug prior to pledge signing and received them immediately subsequent to making the pledge). 3) **Rewarded Response** (RR) -- subjects were asked to sign the pledge and told that if they signed the pledge and met the terms of the pledge they would be rewarded with the t-shirt and mug described above (they were also shown the shirt and mug prior to the pledge signing), and 4) the **Control Group** (CG) -- who was simply asked to continue using the thank-you cards.

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Insert Figure 2 about here
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Figure 2 shows the Actively Caring Agent promise card. It shows a rationale for the target behavior and a space for the subject to demonstrate his or her commitment to emit the target response. This card, like the "thank-you" card, was attractive and perforated with one portion to be returned to the experimenter and the other to be kept by
the subject to serve as a reminder of his or her commitment to distribute the "thank-yous." (This card was adapted from that described by Geller and Lehman, 1991).

The requirement established by the pledge was to hand out at least five thank-you cards weekly for the following five weeks, the length of the intervention.

Session 2, the intervention phase, lasted five weeks. This was necessary as the university's spring break was scheduled during the intervention phase. As such, the intervention was designed to include two weeks on campus prior to and following the break. In order to equate thank-you card use opportunity with baseline, all subjects were issued 50 thank-you cards (10 cards for each week of the intervention).

These mid-semester meetings were held separately for each of the experimental groups in order to minimize any possible communication between subjects across different conditions.

**Session 3: Withdrawal.** A third meeting of each experimental group was scheduled to announce the withdrawal of all contingencies for the experimental groups. RR subjects who had succeeded in meeting the terms of their pledge were rewarded with their prize at this time. All subjects were issued more "thank-you" cards and encouraged to continue using them. These final meetings were identical to the Session 2 meetings which announced the intervention. One exception is noteworthy. As the withdrawal phase was to last three weeks following the termination of the interventions, all subjects were issued 30 thank-you cards instead of 50 as in Session 2. This number is identical to the number of cards issued during baseline, which also lasted for three weeks. As such, the opportunity to use thank-you cards remained constant for each subject and across all phases of the study, at 10 cards a week. **Appendix H** shows the dialogue read to each experimental group during session 3.
To summarize, Figure 3 shows a timeline depicting the manipulations in each experimental phase for each experimental group. The time at which each phase was implemented is also shown.

Results

The rate of thank-you card use was defined for each subject as the number of cards returned to the psychology department. Each card was recorded according to a unique subject number and the date received. Table 1 shows the weekly mean, standard deviation, and range of card returning for each experimental group per experimental phase. Weekly rates of card returning were chosen as the dependent measure because the contingencies placed on the experimental groups during the intervention were phrased in terms of a weekly criterion (i.e., five cards per week). Figure 4 shows these weekly averages for each experimental group across all experimental phases.

In conducting tests of assumptions necessary for the use of the proposed statistical analysis, scatter plots of residuals revealed that the assumptions of linearity, normality,
and homogeneity of variances may have been violated. As such, a square root transformation of the data in the form of \( (Y' = \sqrt{Y}) \) was performed in an attempt to satisfy these assumptions. A subsequent plot of residuals demonstrated that this transformation did not markedly improve the satisfaction of assumptions. Thus, original data were used in all subsequent analyses.

Since the design of the study was imbalanced (baseline and withdrawal lasted for three weeks and intervention lasted for five weeks), only Weeks 1, 2, and 4 from the intervention phase were chosen for inclusion in the final analyses. Weeks 3 and 5 were selected for elimination because Week 3 occurred during the university's spring break, and Week 5 contained an anomalous outlier caused by two subjects in the RC group who returned all 50 of their thank-you cards during this week. Since this outlier grossly inflated the average rate of card returning for one experimental group, the weeks chosen for inclusion provide a conservative representation of the target behavior emitted during intervention. Figure 5 shows the weekly averages for each experimental group by phase with Weeks 3 and 5 of the intervention omitted.

Insert Figure 5 about here

To test the primary hypotheses, weekly card return rates were used as the dependent measure in a 4 Experimental group (Control, CO, RC, RR) X 3 Phase (Baseline, Intervention, Withdrawal) X 3 Week analysis of variance (ANOVA). This analysis yielded a significant main effect for Group \( F(3, 333) = 6.29, p < .01 \) and a
significant main effect for Phase $F(2, 333) = 9.13$, $p < .01$. A significant Group by Phase interaction was also obtained $F (6, 333) = 2.13$, $p < .05$.

In planned pairwise comparisons, paired samples t-tests showed a significant increase in the average weekly rate at which the target behavior was emitted during Intervention ($M = 3.27$) as compared to Baseline ($M = 1.24$) for the RR group ($t[32] = 2.87$, $p < .01$), but not for any of the other experimental groups. A significant decrease in the average weekly rate of thank-you card use from Intervention to Withdrawal ($M = 0.18$) was also found in the RR group ($t[32] = -4.67$, $p < .01$). A similar significant decrease from Intervention ($M = 2.64$) to Withdrawal ($M = 0.56$) was also found for the RC group ($t[38] = -2.54$, $p < .05$). In addition, the RR group showed a significant decrease in the rate of their behavior from Baseline to Withdrawal ($t[32] = -2.08$, $p < .05$). The decline in the average weekly rate of thank-you card use by the RC group from Baseline ($M = 1.72$) to Withdrawal approached significance ($t[38] = -1.72$, $p < .10$). No significant simple effects were found for either the CO or the Control groups. Figure 6 shows the weekly phase averages of thank-you card use for each experimental group and the p-values for the significant effects.

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Insert Figure 6 about here

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Since the number of promise cards signed in the three treatment groups varied greatly, a Chi-square analysis of dependence was performed on pledge signing. This analysis revealed a significant effect of intervention condition on pledge signing $X^2 (2, N = 40) = 9.39$, $p < .01$. Table 2 contains the observed cell values of pledge signing and
pledge non-signing for each intervention group. The table reveals that the interdependence between pledge signing and experimental condition resulted from the CO and RC cells.

To study the impact of the pledge-card intervention on the use of thank-you cards, data were divided according to whether the subject signed the promise to hand out five cards per week. Control subjects, who were not given the opportunity to sign the pledge, were included for comparison. Figure 7 shows the average weekly rate of card returning for each experimental phase as a function of pledge signing. The p-values for significant effects are indicated.

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Insert Figure 7 about here
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Because of the variation in baseline data, simple effects tests were performed to compare baseline performance among the Pledge-signers, Pledge-nonsigners and Control subjects. A two sample t-test indicated that the Pledge-signers and Pledge-nonsigners baseline rates of card returning differed significantly from each other (t[91] = 2.75, p < .01). As a result, to control for the variation in baseline performance, these data were used as a covariate in a 3 Condition (Pledge signed, Pledge not signed, Control) X 3 Phase (Baseline, Intervention, Withdrawal) analysis of covariance (ANCOVA). This analysis yielded a significant main effect for Experimental Phase F(1, 118) = 16.20, p < .01, and for Pledge Signing F(1, 118) = 7.18, p < .01. A significant Experimental Phase by Pledge Signing interaction F(1, 118) = 8.46, p < .01 was also obtained.
Among Pledge signers, two-tailed, paired sample t-tests yielded a significant increase in the average weekly rate of card returning from Baseline (M = 1.59) to Intervention (M = 2.97) (t[65] = -2.47, p < .05), a significant decrease from Intervention to Withdrawal (M = 0.38) (t[65] = 4.62, p < .01), and a significant decrease from Baseline to Withdrawal (t[65] = 2.61, p < .05). Independent sample t-tests showed that the average weekly rate of card returning during intervention was significantly higher among Pledge signers as compared to Pledge nonsigners and Control subjects (both p’s < .01). No other significant simple effects were found.

**Testing the Actively Caring Model**

The second aspect of the study involved testing a model used to predict who would be more likely to actively care for another person or the environment. The criterion was the weekly rate of card returning during Baseline and the predictors were individual scores on the six AC person states. Only baseline measures of card returning were used for this analysis because at this point in the study, all subjects were treated identically. It was logically feared that using the card return data from the entire study would be ineffectual as it was quite possible the different treatments received by the subjects would bias the results. It was hypothesized that subjects scoring higher on the AC person states would be more likely to emit the target response. To test this hypothesis, a stepwise multiple regression analysis was used. Contrary to hypothesis from the AC Model, no factor loaded significantly into the equation. Table 3 shows a matrix of the correlations between predictors and the criterion measure, and between all pairs of predictors.
Discussion

The current study provides support for both reinforcement and intrinsic motivation theories. Support was also found for the effectiveness of combining rewards with written commitments. However, the rates of thank-you card use could not be predicted with measures of the five individual differences deduced from The Actively Caring Model.

Reinforcement theory was supported in that the introduction of contingent rewards increased the probability of pledge signing. Furthermore, when combined with pledge signing, contingent rewards produced the largest increase in the use of thank-you cards from baseline to intervention as predicted by Hypothesis 1.1. This effect was maintained while the intervention was in place, but quickly disappeared at the termination of the pledge period. In fact, the average rate at which RR subjects used the thank-you cards after the pledge period had been terminated decreased substantially from their use of the cards prior to the implementation of the pledge period and announcement of contingent rewards. This effect was predicted by Hypothesis 2.1, and supports the cognitive perspective of intrinsic motivation.

Although an unplanned analysis demonstrated that pledge signers used the thank-you cards to a greater extent than did pledge non-signers, it is difficult to conclude whether this result was due to the effectiveness of the written commitment or a function of the external reward contingencies in the RR and RC conditions. Had the current research included conditions in which contingent and non-contingent rewards were not paired with pledge signing, further conclusions might be available. Future research should include these comparison groups.
Additionally, due to attrition, only one CO pledge signer was included in the final analysis of data. Therefore, Hypothesis 1.2, that a written commitment only intervention would increase the use of thank-you cards could not be adequately tested. Of further interest is that providing rewards for pledge signing did not appear to undermine the commitment to use the thank-you cards during intervention (as predicted by Hypothesis 1.3) or upon withdrawal of the contingencies. This notion is consistent with equity theory (Adams, 1965) and the findings of Deci (1972b).

The undermining of intrinsic motivation requires that contrived contingencies be perceived as controlling by the participants in the intervention process. As each subject in the current study was offered the choice of signing or not signing the Actively Caring Agent promise card (i.e., to make a written commitment), some of these controlling aspects may have been diminished. It becomes important that despite this perception of choice to make a commitment, rewards made contingent on using five thank-you cards weekly did indeed undermine the intrinsic motivation of subjects to use the cards. As the contingent reward manipulation dramatically increased the use of the thank-yous during intervention, an assumption that the t-shirt and mug would serve as a reinforcer in a college community was supported. Because of the decrease in the use of the thank-you cards from pre-treatment to post-treatment, it can also be concluded that these rewards were sufficient to change the locus of causality (for using the thank-you cards) from internal to external in the RR subjects.

If the rewards had an undermining effect contingent on using a certain number of cards, it is counterintuitive that the same reward did not undermine the importance of signing the pledge card. Private free-choice commitment procedures are generally successful in arousing enough dissonance to create a desired effect. The perception of choice should make the written commitment a behavior based on an internal locus of
causality. If Deci and Ryan’s (1985, 1987) conceptualization of intrinsic motivation is correct, then rewarding subjects contingent on their pledge signing should lead to perceptions of external control. Providing an external justification for pledge signing should undermine the value of the commitment with a resultant decrease in the target behavior. This did not occur in the present study.

Performance of the RC subjects may best be understood in terms of the equity theory (Adams, 1965) explanation of intrinsic motivation provided by Deci (1972b). That is, RC subjects were rewarded in advance for their promise to use five thank-you cards a week for the five week duration of the commitment period. As such, these subjects had already received their rewards (the t-shirt, mug, and course credit) and quite possibly experienced an inequitable situation to their advantage. It is possible that in order to reduce this inequity, RC subjects increased the average rate at which they used the thank-yous after signing the pledge and receiving their rewards. It is noteworthy that upon termination of the pledge period, RC subjects used the thank-you cards more often than any other experimental group. This notion is consistent with the conclusions drawn by Deci (1972b) and could also be accounted for by the theories of cognitive dissonance (Festinger, 1957), and reciprocity which claims that people will attempt to re-pay what another person has already provided (Cialdini, 1993).

Because each experimental intervention involved a pledge-signing strategy, it is notable that whether or not subjects made a written commitment to use the thank-you cards depended on the experimental condition to which they were randomly assigned. Of those subjects not lost to attrition, only one CO subject signed the promise to become an Actively Caring Agent, whereas 100 percent of those remaining in the RC group and 82 percent assigned to the RR group signed the pledge. Thus, the low number of pledge signers in the CO group could account for the lack of change in their use of thank-yous.
The CO group in essence performed as the Control group was expected to. Interestingly, however, is that the performance of the CO subjects was indeed better than that of the Control subjects whose average rate of using thank-you cards dropped steadily through each phase of the study. This result was perhaps a function of fatigue or boredom in the absence of any contrived contingencies.

In light of the discussion so far, the dependence of pledge signing on the experimental groups to which subjects were assigned is important issue. The variability in number of pledge signers for each experimental group can be easily accounted for by basic learning principles. Both RC and RR subjects were offered the same reward. RC subjects, however, received their reward immediately upon pledge signing, whereas the RR subjects experienced a delay in receiving their reward. It is well established in the behavioral literature that the most effective reinforcers are those presented in close temporal proximity to the completion of the contingent response (Skinner, 1953). This was the case for the RC subjects. The RR subjects not only had to endure a delay in receiving their reward, they also had to expend a considerable amount of response effort to receive their pay-off. Delayed rewards are often ineffective (the association between the response and reward is weakened) and a considerable amount of response effort required for reward acquisition may be met with countercontrol (Skinner, 1953, 1971). Consequently, the undermining of intrinsic motivation observed in the RR subjects could be accounted for through the notions of countercontrol and psychological reactance (Brehm & Brehm, 1981). In other words, once the pledge period had ended, RR subjects attempted to reassert their freedom and this was manifested behaviorally by a refusal to continue using the thank-you cards.

Hypothesis 3 predicted that there would be a positive relationship between subjects’ scores on the AC person states and their use of the thank-you cards. This
hypothesis was not supported. This result is perhaps due to a small sample size and the limited variance of the data resulting from a large number of zero data points during baseline. This finding does not converge with the findings of Roberts and Geller (1995) who found a strong relationship between subject's scores on the self-esteem, belongingness, and optimism subscales of the ACS and their self-reports of willingness to actively care. In addition to the limitations just mentioned, it is also possible that the novelty of using thank-you cards in the present study undermined the use of thank-yous as an AC behavior. That is, in the current research, subjects were only introduced to the concept of AC, and taught how to use the thank-you cards for the purpose of the study. Had the initial sessions included a more thorough explanation of AC and a more explicit demonstration of how to use the thank-you cards, it is possible that using the thank-you cards would have been taken more seriously, and perceived as less threatening.

Furthermore, since the target response required that subjects return a portion of the card to the psychology department, the response effort of the task may have precluded the true aspect of the behavior, thanking an individual for a desirable behavior. It is quite possible that more thank-you cards were used than were returned to the designated location. Future research should ensure that such data are available for analysis by accounting for unused cards. Finally, it is also possible that some of the behaviors thanked did not always constitute an AC behavior on the part of our subjects. Put simply, some of the cards may have been used for behaviors which did not deserve a thank-you. Thus, the thank-you card return rates were not necessarily representative of the type of AC behaviors predicted by the AC model. As such, the criterion used in the regression analysis performed on the AC person states may not have truly reflected AC as defined by Geller (1991) and Geller, Roberts and Gilmore (in press). Future research should
conduct a content analysis of the behaviors thanked and categorize these behaviors as deserving (AC) or not.

The current research has specific implications for traditional theories of intrinsic motivation in applied settings. First, the results support the notion that incentive plans, which are often used in industry, can work if implemented correctly. Although the termination of an incentive program may be accompanied by a reduction in the rate at which a target behavior is emitted, the results obtained from the RR subjects in the current study indicate, that in a community setting, contingent rewards will increase a desired behavior. The data also support the notion that intermittent introduction of reward programs is necessary for the most effective long-term effects of reward strategies (Geller et al., 1987). Additionally, although the current data suggest that contingent rewards will undermine intrinsic motivation, it is possible that if withdrawal data were collected over a longer period of time (as suggested by Flora, 1990), the use of thank-you cards by the RR group might have returned to pre-intervention levels. Time constraints did not allow for the collection of this data.

It is noteworthy, that only the interventions which used rewards were effective in increasing the use of thank-you cards. Furthermore, contingent rewards increased the use of thank-yous above baseline to a greater degree than non-contingent rewards (i.e., RC subjects), yet the average rate at which RR subjects used the thank-yous during withdrawal was lower than the rate of responding emitted by RC subjects. The implications for such a finding are that contingent reward programs may be most beneficial when the initial rates of responding are low, and non-contingent rewards may be more effective (in the long-term), when initial rates of responding are moderate and only a modest increase in the target behavior is necessary. More research is clearly needed on this issue.
The current findings also have implications for enrolling intervention agents for long-term large-scale behavior change. Incidental data showed that attrition rates for subjects in the RR and Control groups were over 40 percent, and for the CO group, near 50 percent. On the other hand, attrition in the RC group was at 35 percent. Clearly, then, the RC intervention was the strongest at keeping subjects committed to the project over the course of the 11-week study. This commitment may have resulted because the RC subjects were more likely to sign the promise card. The greater number of participants in the RC condition could also clearly account for their higher amount of thank-you card use during withdrawal.

Limitations of the Current Research.

The effects of combining written commitment and external rewards should be examined more thoroughly. This combination becomes important in examining perceptions of external control as a moderator of undermining intrinsic motivation. In the current research, subject’s were explicitly told they could choose to become an Actively Caring agent, or not to. As such, this laid the ground work for an internal locus of causality for using the thank-you cards. It would be expected that extrinsic rewards alone should have a greater undermining effect than when combined with a written commitment. The written commitment should in essence weaken the perceptions of external control, as a result cause less dissonance, and manifest itself behaviorally in higher rates of responding. Unfortunately, the current study did not use a reward only condition, whereby more answers to the effects of external rewards and written commitments could be obtained. Follow-up research should directly test the effects of rewards for pledge-signing and rewards contingent on the emission of a target behavior.
It has been argued that contingent rewards will diminish the quality of work produced by the rewarded response (Lepper et al., 1973; Kohn, 1993). Unfortunately, this aspect of contrived contingencies could not be examined in the present study. This particular drawback, however, is met with a positive pay-off in that unlike traditional studies of intrinsic motivation, the current study examined behavior over time, and had an objective measure of intrinsic motivation, average rate of responding. The majority of laboratory studies of intrinsic motivation are conducted in a single session, and as criticized in the review of the literature, use more subjective behavioral measures of intrinsic motivation. The current study is unique in that the withdrawal phase (our parallel to the free-choice measure usually employed) lasted for three weeks, not just minutes. This provided the opportunity for average response rates to return to baseline levels as would be predicted by a matching law analysis. As this did not happen in the RR (contingent reward) group, it can be claimed that the undermining observed in the present study was more powerful than that which has been reported previously (e.g., Deci, 1971; Lepper et al., 1973). Additionally, a three-week baseline provided a more accurate observation of pre-intervention levels of intrinsic motivation.

There are other limitations to the current research, however. In designing the study, some assumptions were made. The first, that the t-shirt and mug would serve as reinforcers in a college population has already been discussed, and was satisfied. Another important assumption, however, was that all subjects intervened upon would sign the promise to become an Actively Caring agent. This did not occur. It is noteworthy, however, that part of the process of enrolling intervention agents in a community program is to get their commitment. The variability between experimental groups in the number of subjects who signed the promise card had a marked effect on the behavioral outcomes of thank-you cards use. As such, future research should address the issue of not only
which intervention is most successful at increasing and maintaining the intrinsic motivation to serve as an intervention agent, but also, how many intervention agents are enrolled, and how many stay with the process. To enroll a single agent who responds at very high rates during intervention, only to stop once the intervention has concluded, may not have the impact of ten intervention agents who respond at moderate rates and maintain their behavior beyond the period in which contingencies are in effect. This point relates directly to the issue discussed earlier about initial rates of responding and the more appropriate timing of rewards (i.e., prior to or contingent on performance). Future examination of intrinsic motivation in applied settings should address this issue. Furthermore, in such studies, the magnitude of reward should be manipulated.

From the current study, and the existing literature, it was speculated that high levels of non-contingent rewards could produce similar patterns of responding as moderate or low level contingent rewards. This notion was supported by Enzle and Ross (1978) in a controlled laboratory environment. Follow-up research is needed.

Another potential problem with the results obtained in the current study involves the high within group variability in the rate of the target behavior. This variability could potentially be accounted for by distinguishing between pledge signers and pledge non-signers. Thus, it is quite possible that the effects obtained were due to a small portion of subjects in each experimental group. For theoretical purposes, future research should ensure that all subjects are successfully intervened upon. As mentioned above, the results of the present research may be a function of the number of pledge signers, and this contaminates the effects of the reward contingencies. Laboratory research could help to answer some of the questions left unanswered by the current research. It is important to note, however, that an intervention is only as successful as the number of people it affects. As such, the variability in pledge signing and the subsequent behavior of a group
of pledge signers and pledge non-signers is an important piece of information with great implications for the design of real world interventions. Post hoc analyses of the current data demonstrated that more thank-you cards were used by pledge signers, but it was not possible to separate out the effects of pledge signing and reward contingencies without contingent and non-contingent reward only comparison groups.

The low use of thank-you cards by CO and Control subjects may have been due to the nature of the task. Participants were told to look for and reward members of the university community for going out of their way to help another person or care for the environment. Although provided with examples of such behaviors, the myriad of behaviors encountered in everyday life is overwhelming. A modification to the present research would be to more specifically define the behaviors which deserve a thank-you. Behavior is a broad term. Defining behaviors in terms of specific responses may eliminate what could have been a potential inhibitor of using the thank-you cards. Future research is planned to investigate this possibility.

Finally, rewards in the current study were delivered at a single time. The optimal situation would have been to provide smaller rewards on a fixed ratio schedule of reinforcement for the RR (contingent reward) subjects. Such a procedure is more in the tradition of behavior analysis, and could have led to strikingly different results. In addition, it must be noted that the primary dependent variable in the current research was the weekly rate of card returning. At this point it is impossible to know if the other portion of the returned card was actually given to a thank-you recipient or if demand characteristics caused subjects to feign their efforts. It could be speculated, that if this was the case, those subjects receiving rewards would have been more prone to such a temptation. Future research should address this issue of social validity.
Conclusions

Research in the area of intrinsic motivation is very relevant to applied psychology. Reward systems, commitment strategies, and a variety of other contrived contingencies saturate intervention processes used in community and organizational settings. It is counterintuitive that the proliferation of intrinsic motivation studies are conducted in controlled laboratory settings. The current research is a rare exception. The field of applied behavior analysis is concerned with real world phenomena and often uses contrived contingencies like those used in the current study. If the field of psychology is truly interested in the processes by which intrinsic motivation is undermined, or in some instances enhanced, then it is necessary to study the phenomenon in naturalistic environments in which other naturally occurring variables may interact with those under investigation.

The most effective large-scale behavior change processes involve members of the culture for which the process was designed. Keeping people involved is best accomplished by providing, at a minimum, perceptions of choice and empowerment. This may best be accomplished by implementing contingencies which are just sufficient enough to motivate the behavior but, not too large to cause overjustification. If the desired behavior occurs naturally at moderate levels then less powerful incentives may be employed. If the behavior is non-existent or occurs rarely, then more powerful contingencies may be necessary. This remains an empirical question raised by the current study.

Intrinsic motivation does not necessarily have to take on the status of a theoretical abstraction or construct. A proper functional analysis of intrinsic motivation should indicate the control of environmental stimuli naturally occurring in the experimental setting. As it is impossible to control for all extraneous variables operating in a field
setting, care should be taken to identify those variables which most readily interact with the contrived contingencies established in a behavior change process. To become proficient in doing so, research investigating intrinsic motivation needs to move out of the laboratory and into the real world.
References


Table 1:
Weekly Mean, Standard Deviation, and Range of Card Returning for Each Experimental Phase as a Function of Experimental Condition

**Control Group (n = 9)**

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**Commitment Only (n = 8)**

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<td>Standard Dev.</td>
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**Rewarded Commitment (n = 13)**

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<td>Standard Dev.</td>
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**Rewarded Response (n = 11)**

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Table 2:  
Chi-square Observed Cell Values for Pledge Signing as a Function of Experimental Condition

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Table 3:
Correlation Matrix of Actively Caring Person States with Weekly Rate of Card Returning

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<th>BELONG</th>
<th>OPTIMISM</th>
<th>P. CONTR</th>
<th>SELF EFF</th>
<th>SELF EST</th>
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Figure 1: The Actively Caring Thank-You Card which subjects were encouraged to use.
Actively Caring Agent

As an "Actively Caring Agent," I am concerned about the welfare and safety of others and the environment.

I promise to give out at least 5 thank-you cards weekly for the next 5 weeks because I Actively Care.

Signed: [Signature]

Figure 2: The Actively Caring Agent Promise Card which experimental subjects were asked to sign.
The interventions below correspond to those in the above timeline.

A. MOTIVATIONAL SPEECH
B. ACTIVELY CARING SURVEY
C. ISSUE THANK-YOU CARDS
D. SIGN PROMISE CARD
E. ANNOUNCE INCENTIVE
F. ANNOUNCE TERMINATION OF PLEDGE PERIOD
G. REWARD WITH T-SHIRT AND MUG
H. ADVERTISE CONTINUATION OF THANK-YOU CARD PROGRAM

Figure 3: Timeline of Events for Research
Figure 4: Weekly Average Number of Cards Returned for Each Experimental Phase as a Function of Experimental Group
Figure 5: Weekly Average Number of Cards Returned for Each Experimental Phase as a Function of Experimental Group with Weeks 3 and 5 of Intervention Omitted
Figure 6: Average Weekly Number of Cards Returned by Experimental Groups as a Function of Experimental Phase
Figure 7: Average Weekly Number of Cards Returned for each Experimental Phase as a Function of Pledge Signing
Appendix A:
Information Contained in Sign-up Folder and
Informed Consent Documents

ACTIVELY CARING THANK-YOU STUDY
HSC/IRB Approval #94-288

Principle Investigator: Ted Boyce

Receive up to four extra credit points for rewarding deserving people who go out of their way to help another person or protect the environment. Come and find out how you can make someone's day a little brighter.

To be eligible to participate in this study, you must be available to attend an hour long meeting on one of the following dates and times:

2-7-95 at 6:00 p.m. in Pamplin 3004
2-7-95 at 7:30 p.m. in Pamplin 3004
2-8-95 at 6:00 p.m. in Pamplin 3004
2-8-95 at 7:30 p.m. in Pamplin 3004
2-9-95 at 7:30 p.m. in Pamplin 1003

Please sign up on the page in the folder which is labeled with the date and time you are available.
Please direct questions regarding this experiment to Ted Boyce, 5100 Derring Hall, or call 231-8145.

Thursday 2-9-95 at 7:30 p.m.

(*if you can't make this time please see the other sheets in this folder*)

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</table>

69
1. THE PURPOSE OF THIS RESEARCH
   You are invited to participate in a project which rewards members of the community who go out of their way (Actively Care) to help another person or care for the environment. We are interested in the extent to which members of the university community are willing to thank other people for the good things they do.

2. PROCEDURES
   You will be required to attend three meetings throughout the course of the semester. In addition, between meetings (i.e. for about 1 month) you will be asked to look for and reward Actively Caring behaviors by handing a thank-you card to these deserving individuals. In addition to handing out the thank-you card, you will be asked to fill out the thank-you card with the behavior being thanked and the name of the person being thanked. A portion of the thank-you card must be returned to a drop box at 5100 Derring Hall.
   You will be asked to complete a brief questionnaire during this first meeting.

3. BENEFITS OF THIS PROJECT
   Your participation in this project will help assess the extent to which members of a community are willing to reward kind and beneficial behaviors. It will also allow us to assess the social validity of the thank-you card as a means of rewarding community members.

4. EXTENT OF ANONYMITY AND CONFIDENTIALITY
   THE RESULTS OF THIS STUDY WILL BE KEPT STRICTLY CONFIDENTIAL. At no time will the researchers release your results in this study to anyone other than individuals working on the project without your written consent. The information you provide will have your name removed and only a subject number will identify you during analyses and any written reports of the research.

5. COMPENSATION
   You will receive 1 point of extra credit for your attendance at the first mandatory meeting, 1 additional credit for your attendance at the second mandatory meeting and 2 more extra credit points for your attendance at the third mandatory meeting. Successful completion of the study will provide you with a total of 4 extra credit points for your participation.

6. FREEDOM TO WITHDRAW
   YOU ARE FREE TO WITHDRAW FROM THIS STUDY AT ANY TIME WITHOUT PENALTY. If you chose to withdraw, you will still be compensated for the portions of the study you do complete.
7. APPROVAL OF RESEARCH

This research has been approved, by the Human Subjects committee of the Department of Psychology and by the Institutional Review Board Virginia Polytechnic Institute and State & University.

Faculty Advisor: E. Scott Geller Phone: 231-6223
Chair, HSC: Richard M. Eisler Phone: 231-7001
Chair, IRB: Ernest Stout Phone: 231-9359

8. SUBJECT'S RESPONSIBILITIES

I know of no reason I cannot participate in this study. I have the responsibility of letting the researcher know of any discomfort or problems I have during course of the study.

______________________________________________
Signature

9. SUBJECT'S PERMISSION

I have read and understand the informed consent form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

If I have any questions about this research, I will contact Ted Boyce, 5100 Derring Hall, Dept. of Psychology, Virginia Tech. Phone: 231-8145.

By signing this form I also agree not to discuss this procedure with anyone until I have been formally debriefed.

Name ________________________________ SS#: ________________________________
Appendix B:
Baseline Dialogue

I. Welcome

A. Is there anyone who has not already signed-up for this study? (head count)

II. Informed Consent

A. Please take a couple of minutes to read and sign the informed consent form. A copy of this form was included with the sign-up sheets on the 5th FL. of Derring.

B. While you are reading the form, I will briefly highlight for you the purpose of this study and what will be required of you.

1. Pilot program for Virginia Tech
   a. Individual reactions to the possibility of implementing the program campus wide.

2. Attendance at 2 other meetings

3. Look for and reward deserving behaviors by handing out these cards (which I will describe in more detail in a minute).

C. Confidentiality of data

1. As mentioned earlier, we are interested in individual perceptions of this program. It is for this reason we need to identify you by the last 4 digits of your SS#. We will not at any time associate your responses with your name.

2. Because we are interested in individual perceptions, we will also ask that you not discuss this program with anyone until you have formally completed the study. By signing the informed consent form you have already agreed to this.
III. AC Survey

A. We are now going to ask you to complete a brief questionnaire which asks about your opinions on certain items. Please take a few minutes to complete this questionnaire. Remember, your responses will be kept strictly confidential.

B. While your are completing the questionnaire we will distribute the thank-you cards. Please tell my associate the last 4 digits of your SS# as he/she comes by.

IV. Card Dialogue- I will now explain in more detail what will be required of you between meetings. In general, you are asked to look for behaviors which deserve recognition, complete this card, hand a portion of it to the deserving individual, and return the other portion to 5100 Derring Hall.

A. Types of behaviors to be thanked (point to list on card and read, include good lecture from instructor as part of list.

B. How to fill out and return card.
   1. Drop box
   2. Campus mail (no charge)
   3. U.S. Postal Service

C. These cards are only for your use. Please do not share cards with anyone. All unused cards will be collected.

D. If you run out of cards you may pick-up more at 5100 Derring Hall during regular business hours.

V. Appointment Cards

A. We will now hand-out cards which contain the date, time and location of your next meeting with us. Please inform us if you cannot make this appointment.

VI. Motivational Speech (see attached).
Appendix C:
Demographic Questionnaire

Background Information

Please take a minute to answer the following questions. All information will be kept strictly confidential.

Last 4 digits of SS#_______

1. I am: Male / Female.

2. I am: ___ years old.

3. I am a: Freshman / Sophomore / Junior / Senior / Other.

4. My major is: ________________.

5. I am an Intro Psyc student. yes / no

6. I live on / off campus.

7. I have ___ (#) roommates.

8. My overall QCA is ____.

9. I am a member of a: (Please circle all that apply.)
   service organization
   honor society
   athletic team
   Greek organization
   other.
Appendix D:
Copy of the Actively Caring Survey

Actively Caring Questionnaire

This is a questionnaire about your beliefs and feelings about various things. There are a number of statements with which you will tend to agree or disagree. After each statement, please fill in the number that best describes your current feelings. The number you choose doesn't have to describe how you feel all of the time, just how you feel most of the time. You don't need to spend much time on any one item—mark your first choice, then move on to the next statement. Please be sure to fill in the number that indicates how you actually feel, not how you think you should feel. There are no "right" or "wrong" answers; this questionnaire only asks about you personal opinions. Remember that all your answers are completely anonymous.

Circle 1 = completely disagree; 2 = disagree; 3 = sometimes
4 = agree; 5 = completely agree

1) There are lots of things about myself I'd change if I could. 1 2 3 4 5
2) I always look on the bright side of things. 1 2 3 4 5
3) It is easy for me to make new friends. 1 2 3 4 5
4) I trust my group of friends 1 2 3 4 5
5) If somebody studies hard enough, he or she can pass any subject. 1 2 3 4 5
6) I really enjoy my group of friends. 1 2 3 4 5
7) I have recently helped a person with a problem. 1 2 3 4 5
8) When trying to learn something new, I soon give up if I am not initially successful. 1 2 3 4 5
9) I'm a lot of fun to be with. 1 2 3 4 5
10) I usually count on good things to happen to me. 1 2 3 4 5
11) I dislike my group of friends. 1 2 3 4 5
12) I should go out of my way to help people more often. 1 2 3 4 5
13) If something looks too complicated, I will not even bother to try it. 1 2 3 4 5
14) In uncertain or difficult times, I usually expect the best. 1 2 3 4 5
15) Most of the time it doesn't pay to try hard because things never turn out right anyway. 1 2 3 4 5
16) The members in my group of friends share much in common. 1 2 3 4 5
17) If a friend comes to me with a personal problem, I'm willing to listen without being judgmental. 1 2 3 4 5
18) I should pick up trash I see left lying around. 1 2 3 4 5
Circle 1 = completely disagree; 2 = disagree; 3 = sometimes  
4 = agree; 5 = completely agree

19) I have acquired my friends through my personal abilities at making friends. 1 2 3 4 5
20) I should donate blood as often as possible. 1 2 3 4 5
21) It's pretty tough to be me. 1 2 3 4 5
22) If anything can go wrong for me, it probably will. 1 2 3 4 5
23) I try to leave everything a little better than I found it. 1 2 3 4 5
24) I feel like I really belong to my group of friends. 1 2 3 4 5
25) When I see a person looking down or depressed I usually leave him/her alone. 1 2 3 4 5
26) I give up on things before completing them. 1 2 3 4 5
27) I often wish I were someone else. 1 2 3 4 5
28) Things never work out the way I want them to. 1 2 3 4 5
29) Most of the time I feel that I can change what might happen tomorrow by what I do today. 1 2 3 4 5
30) I feel a need to be friends with the people in my group. 1 2 3 4 5
31) I always make sure my friends don't drink and drive, even if it causes me some inconvenience. 1 2 3 4 5
32) When I'm trying to become friends with someone who seems uninterested at first, I don't give up easily. 1 2 3 4 5
33) I have a high opinion of myself. 1 2 3 4 5
34) I rarely count on good things happening to me. 1 2 3 4 5
35) I feel that it's nearly impossible to change my parent's mind about anything. 1 2 3 4 5
36) The people in my group of friends are not afraid to share personal information with each other. 1 2 3 4 5
37) I don't usually recycle aluminum cans. 1 2 3 4 5
38) I'm a believer in the idea that "every cloud has a silver lining". 1 2 3 4 5
39) My group of friends is not very close at all. 1 2 3 4 5
40) Failure just makes me try harder. 1 2 3 4 5
41) When bad things are going to happen, they just are going to happen no matter what I try to do to stop them. 1 2 3 4 5
42) I wish I could have more respect for myself. 1 2 3 4 5
43) On the whole I'm satisfied with myself. 1 2 3 4 5
44) I hardly ever expect things to go my way. 1 2 3 4 5
45) I avoid trying to learn new things when they look too difficult for me. 1 2 3 4 5
46) I am able to do things as well as most other people. 1 2 3 4 5
47) I'm often sorry for the things I do. 1 2 3 4 5
<table>
<thead>
<tr>
<th>Question</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>48) Most of the time I find it useless to try to get my own way</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>at home.</td>
<td></td>
</tr>
<tr>
<td>49) I feel I have much to be proud of.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>50) I am willing to help a person I don't know.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>51) When I drive, I make sure all passengers wear their safety</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>belts.</td>
<td></td>
</tr>
<tr>
<td>52) All in all, I am inclined to feel that I am a failure.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>53) I'm always optimistic about my future.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>54) One of the best ways to solve most problems is just not to</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>think about them.</td>
<td></td>
</tr>
<tr>
<td>55) When someone doesn't like me, there's little I can do about it.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>56) I feel close to the people in my group of friends.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>57) I try to recycle all paper, plastic and aluminum when possible.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>58) I take a positive attitude toward myself.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
Appendix E:
Transcript of Session 1 Motivational Speech

We live in a society which often criticizes us for the things we do wrong and rarely acknowledges us for the things we do right. You are being given the opportunity to thank people for the good things they do. This will make their day a little better and I'm sure you will feel great for doing so. This is a wonderful opportunity for you to be involved in a process which can change the way people react to other people. Although this study will only be conducted throughout the course of this semester, we plan to continue the thank-you card program in the future. Your participation will give us a good idea of how willing students are to thank members of the community for going out of their way to help others or protect the environment.

We encourage you to hand-out as many thank-you cards as you wish and ask that you stop by Derring 5100 to pick-up more once you have run out. Have fun with this activity!
Appendix F:
Transcript of Telephone Reminder

Hi! My name is: (fill in your name here). I’m calling from the department of psychology to remind you of your next appointment in the Actively Caring Thank-you Study on: (fill in appropriate day, date, and time here). We will be meeting in: (fill in appropriate room number here). Thank-you for your participation. We will look forward to seeing you on: (fill in appropriate day here) at (fill in appropriate time here). Bye-bye.
Appendix G:
Intervention Dialogues for Each Experimental Group

Intervention: Control

I. Welcome

A. Is there anyone here who did not attend the first meeting of this group?

B. Is there anyone who has some completed cards to return to us? Please place these cards on your desk and we will collect them.

C. We would now like to collect any unused cards you have with you. Please place these on your desk and we will come around to collect them. If you did not remember to bring your unused cards with you, please tell my assistant and he will provide you with an envelop that you can use to return them or if you prefer, you can drop them off at 5100 Derring Hall. Virginia Tech policy requires that we collect all of the unused cards you were previously issued.

D. As we mentioned at the onset of this study, we are interested in your individual reactions to the Virginia Tech thank-you card program. Is there anyone here who has any questions or would like to share an experience you have had with the thank-you cards?

II. AC Survey

A. We are now going to ask you to complete a brief questionnaire about your opinion on certain items. Please take a few minutes to complete this questionnaire. Remember, your responses will be kept strictly confidential.

III. Issue more cards.

A. We are now going to issue you a new set of cards. These cards are to be used over the next 5 weeks. Please tell my associate the last 4 digits of your SS# as he/she comes by. (Wait until all have cards)
B. We want to remind you that your participation in this study is asking you to look for behaviors which deserve recognition, complete the upper portion of the card, hand it to the person being thanked, and complete the bottom portion of the card and return it to 5100 Derring Hall. The portion of the card to be returned can be placed in this drop box which is hanging from a bulletin board just outside of Derring 5100, mailed through campus mail, or through the U.S. Postal service. We would like these cards returned within 24-48 hours after they have been completed or at a minimum by the Monday following their date of completion.

C. Please remember, these cards are for your use only. Please do not share these cards with anyone. All unused cards will be collected. Also please remember that by signing the informed consent form at the first meeting, you have agreed not to discuss this project with anyone until your participation has been completed.

D. If you run out of cards, you may pick-up more at 5100 Derring Hall during regular business hours.

IV. Appointment Cards

A. We will now hand-out cards which contain the date, time, and location of your next meeting with us. You will receive an additional two points of extra-credit for your attendance at this meeting which will be held 2 weeks after Spring Break.

V. Motivational Speech (Start to hand-out pledge cards.)

A. We remain excited about this pilot program for Virginia Tech. We are also encouraged that you have found the opportunity to use the thank-you cards. We want to remind you that this is a semester long program and would like to ask that you keep your enthusiasm for using the cards. Please note that the thank-you cards do not have to be used on the Tech campus so we urge you to take the cards with you on Spring Break. As always, don't take this project too seriously and have fun with it. See you after break.
Intervention: Commitment Only

I. Welcome

A. Is there anyone here who did not attend the first meeting of this group? Is there anyone who received a different appointment time than this?

B. Is there anyone who has some completed cards to return to us? Please place these cards on your desk and we will collect them.

C. We would now like to collect any unused cards you have with you. Please place these on your desk and we will come around to collect them. If you did not remember to bring your unused cards with you, please tell my assistant and he will provide you with an envelop that you can use to return them or if you prefer, you can drop them off at 5100 Derring Hall. Virginia Tech policy requires that we collect all of the unused cards you were previously issued.

D. As we mentioned at the onset of this study, we are interested in your individual reactions to the Virginia Tech thank-you card program. Is there anyone here who has any questions or would like to share an experience you have had with the thank-you cards?

II. AC Survey

A. We are now going to ask you to complete a brief questionnaire about your opinion on certain items. Please take a few minutes to complete this questionnaire. Remember, your responses will be kept strictly confidential.

III. Issue more cards.

A. We are now going to issue you a new set of thank-you cards. These cards are to be used over the next 5 weeks. Please tell my associate the last 4 digits of your SS# as he/she comes by. (Wait until all have cards)

B. We want to remind you that your participation in this study is asking you to look for behaviors which deserve recognition, complete the upper portion of the card, hand it to the person being thanked, and complete the bottom portion of the card and return it
to 5100 Derring Hall. The portion of the card to be returned can be placed in this drop box which will be hanging from a bulletin board just outside of Derring 5100, mailed through campus mail, or through the U.S. Postal service. We would like these cards returned within 24-48 hours after they have been completed or at a minimum by the Monday following their date of completion.

C. Please remember, these cards are for your use only. Please do not share these cards with anyone. All unused cards will be collected. Also please remember that by signing the informed consent form at the first meeting, you have agreed not to discuss this project with anyone until your participation has been completed.

D. If you run out of cards, you may pick-up more at 5100 Derring Hall during regular business hours.

IV. Appointment Cards

A. We will now hand-out cards which contain the date, time, and location of your next meeting with us. You will receive an additional two points of extra-credit for your attendance at this meeting which will be held 2 weeks after Spring Break.

V. Motivational Speech (Start to hand-out pledge cards.)

A. We remain excited about this pilot program for Virginia Tech. We are also encouraged that you have found the opportunity to use the thank-you cards. We want to remind you that this is a semester long program and would like to ask that you keep your enthusiasm for using the cards. In fact, in order to encourage you further, we would like to ask you to sign a pledge to become an Actively Caring Agent. My assistant will distribute the these pledge cards. Once you have received the pledge card, please take a minute to read it. This pledge will encourage you to hand-out and return at least 5 (five) cards per week for the next 5 (five) weeks. If you choose to become an Actively Caring Agent, please sign the pledge card and check the appropriate box to the right of the card. An alternate box is provided for those of you who do not wish to become an Actively Caring Agent. One of my assistants will come around to detach the portion of the card to be returned to us. The other portion is to be kept by you as a reminder of your commitment. Please note that the thank-you cards do not have to be used on the Tech campus so we urge you to take the cards with
you on Spring Break. As always, don't take this project too seriously and have fun with it. See you after break. Thank-you.
Intervention: Rewarded Commitment

I. Welcome

A. Is there anyone here who did not attend the first meeting of this group? Is there anyone who received a different appointment time than this?

B. Is there anyone who has some completed cards to return to us? Please place these cards on your desk and we will collect them.

C. We would now like to collect any unused cards you have with you. Please place these on your desk and we will come around to collect them. If you did not remember to bring your unused cards with you, please tell my assistant and he will provide you with an envelop that you can use to return them or if you prefer, you can drop them off at 5100 Derring Hall. Virginia Tech policy requires that we collect all of the unused cards you were previously issued.

D. As we mentioned at the onset of this study, we are interested in your individual reactions to the Virginia Tech thank-you card program. Is there anyone here who has any questions or would like to share an experience you have had with the thank-you cards?

II. AC Survey

A. We are now going to ask you to complete a brief questionnaire about your opinion on certain items. Please take a few minutes to complete this questionnaire. Remember, your responses will be kept strictly confidential.

III. Issue more cards.

A. We are now going to issue you a new set of thank-you cards. These cards are to be used over the next 5 weeks. Please tell my associate the last 4 digits of your SS# as he/she comes by. (Wait until all have cards)

B. We want to remind you that your participation in this study is asking you to look for behaviors which deserve recognition, complete the upper portion of the card, hand it to the person being thanked, and complete the bottom portion of the card and return it
to 5100 Derring Hall. The portion of the card to be returned can be placed in this drop box which will be hanging from a bulletin board just outside of Derring 5100, mailed through campus mail, or through the U.S. Postal service. We would like these cards returned within 24-48 hours after they have been completed or at a minimum by the Monday following their date of completion.

C. Please remember, these cards are for your use only. Please do not share these cards with anyone. All unused cards will be collected. Also please remember that by signing the informed consent form at the first meeting, you have agreed not to discuss this project with anyone until your participation has been completed.

D. If you run out of cards, you may pick-up more at 5100 Derring Hall during regular business hours.

IV. Appointment Cards

A. We will now hand-out cards which contain the date, time, and location of your next meeting with us. You will receive an additional two points of extra-credit for your attendance at this meeting which will be held 2 weeks after Spring Break.

V. Motivational Speech (Start to hand-out pledge cards.)
A. We remain excited about this pilot program for Virginia Tech. We are also encouraged that you have found the opportunity to use the thank-you cards. We want to remind you that this is a semester long program and would like to ask that you keep your enthusiasm for using the cards. In fact, in order to encourage you further, we would like to ask you to sign a pledge to become an Actively Caring Agent. My assistant will distribute the these pledge cards. Once you have received the pledge card, please take a minute to read it. This pledge will encourage you to hand-out and return at least 5 (five) cards per week for the next 5 (five) weeks. If you sign the pledge, we will reward you with this nice insulated travel mug and this Official Actively Caring Agent t-shirt at the end of the meeting tonight. If you choose to become an Actively Caring Agent, please sign the pledge card and check the appropriate box to the right of the card. An alternate box is provided for those of you who do not wish to become an Actively Caring Agent. Please note that the thank-you cards do not have to be used on the Tech campus so we urge you to take the cards with you on Spring Break. As always, don't take this project too seriously and
have fun with it. If you have chosen to sign the pledge, please exit to my right and we will issue you your reward and detach the portion of the pledge to be kept by us. The other portion is to be kept by you as a reminder of your commitment. If you have chosen not to sign the pledge, please exit to my left and return the pledge card with the appropriate box marked. Thank-you and have a nice spring break.
Intervention: Rewarded Response

I. Welcome

A. Is there anyone here who did not attend the first meeting of this group? Is there anyone who received a different appointment time than this?

B. Is there anyone who has some completed cards to return to us? Please place these cards on your desk and we will collect them.

C. We would now like to collect any unused cards you have with you. Please place these on your desk and we will come around to collect them. If you did not remember to bring your unused cards with you, please tell my assistant and he will provide you with an envelop that you can use to return them or if you prefer, you can drop them off at 5100 Derringer Hall. Virginia Tech policy requires that we collect all of the unused cards you were previously issued.

D. As we mentioned at the onset of this study, we are interested in your individual reactions to the Virginia Tech thank-you card program. Is there anyone here who has any questions or would like to share an experience you have had with the thank-you cards?

II. AC Survey

A. We are now going to ask you to complete a brief questionnaire about your opinion on certain items. Please take a few minutes to complete this questionnaire. Remember, your responses will be kept strictly confidential.

III. Issue more cards.

A. We are now going to issue you a new set of thank-you cards. These cards are to be used over the next 5 weeks. Please tell my associate the last 4 digits of your SS# as he/she comes by. (Wait until all have cards)

B. We want to remind you that your participation in this study is asking you to look for behaviors which deserve recognition, complete the upper portion of the card, hand it to the person being thanked, and complete the bottom portion of the card and return it
to 5100 Derring Hall. The portion of the card to be returned can be placed in this drop box which will be hanging from a bulletin board just outside of Derring 5100, mailed through campus mail, or through the U.S. Postal service. We would like these cards returned within 24-48 hours after they have been completed or at a minimum by the Monday following their date of completion.

C. Please remember, these cards are for your use only. Please do not share these cards with anyone. All unused cards will be collected. Also please remember that by signing the informed consent form at the first meeting, you have agreed not to discuss this project with anyone until your participation has been completed.

D. If you run out of cards, you may pick-up more at 5100 Derring Hall during regular business hours.

IV. Appointment Cards

A. We will now hand-out cards which contain the date, time, and location of your next meeting with us. You will receive an additional two points of extra-credit for your attendance at this meeting which will be held 2 weeks after Spring Break.

V. Motivational Speech (Start to hand-out pledge cards.)

A. We remain excited about this pilot program for Virginia Tech. We are also encouraged that you have found the opportunity to use the thank-you cards. We want to remind you that this is a semester long program and would like to ask that you keep your enthusiasm for using the cards. In fact, in order to encourage you further, we would like to ask you to sign a pledge to become an Actively Caring Agent. My assistant will distribute the these pledge cards. Once you have received the pledge card, please take a minute to read it. This pledge will encourage you to hand-out and return at least 5 (five) cards per week for the next 5 (five) weeks. If you sign the pledge, and meet or exceed the terms to the promise, we will reward you with this nice insulated travel mug and this Official Actively Caring Agent t-shirt at the end of the pledge period. If you choose to become an Actively Caring Agent, please sign the pledge card and check the appropriate box to the right of the card. An alternate box is provided for those of you who do not wish to become an Actively Caring Agent. One of my assistants will come around to detach the portion of the card to
be returned to us. The other portion is to be kept by you as a
reminder of your commitment. Please note that the thank-you cards do
not have to be used on the Tech campus so we urge you to take the cards with
you on Spring Break. As always, don't take this project too seriously and
have fun with it. See you after break. Thank-you.
Appendix H:
Withdrawal Dialogues for Each Experimental Group

Withdrawal Dialogue: Control

I. Welcome

A. Is there anyone here who did not attend each of the first two meetings of this group?

B. Is there anyone who has some completed thank-you cards to return to us? Please place these cards on your desk and we will collect them.

C. We would now like to collect any unused cards you have with you. Please place these on your desk and we will come around to collect them. If you did not remember to bring your unused cards with you, please tell my assistant and he will provide you with an envelop that you can use to return them or if you prefer, you can drop them off at 5100 Derring Hall. Virginia Tech policy requires that we collect all of the unused cards you were previously issued.

D. As we mentioned at the onset of this study, we are interested in your individual reactions to the Virginia Tech thank-you card program. Is there anyone here who has any questions or would like to share an experience you have had with the thank-you cards?

II. AC Survey

A. We are now going to ask you to complete a brief questionnaire about your opinion on certain items. Please take a few minutes to complete this questionnaire. Remember, your responses will be kept strictly confidential.

III. Issue more cards.

A. We are now going to issue you a new set of thank-you cards. These cards are to be used over the next 3 weeks. Please tell my associate the last 4 digits of your SS# as he/she comes by. (Wait until all have cards)
B. We want to remind you that your participation in this study is asking you to look for behaviors which deserve recognition, complete the upper portion of the card, hand it to the person being thanked, and complete the bottom portion of the card and return it to 5100 Derring Hall. The portion of the card to be returned can be placed in this drop box which is hanging from a bulletin board just outside of Derring 5100, mailed through campus mail, or through the U.S. Postal service. We would like these cards returned within 24-48 hours after they have been completed or at a minimum by the Monday following their date of completion.

C. Please remember, these cards are for your use only. Please do not share these cards with anyone. All unused cards will be collected. Also please remember that by signing the informed consent form at the first meeting, you have agreed not to discuss this project with anyone until your participation has been completed.

D. If you run out of cards, you may pick-up more at 5100 Derring Hall during regular business hours.

V. Motivational Speech (Start to hand-out pledge cards.)

A. We remain excited about this pilot program for Virginia Tech. We are also encouraged that you have found the opportunity to use the thank-you cards. We want to remind you that this is a semester long program and would like to ask that you continue to hand-out as many thank-you cards as you feel comfortable with, or none at all. Please remember that the thank-you cards do not have to be used on the Tech campus. We will provide you with an envelope which can be used to return any unused cards to us at the end of the semester. In addition, if you would like to receive a written report about the thank-you card program, you can request one by enclosing a note containing your name and address in the envelope with the unused cards. Furthermore, we would like to ask that you look for fliers announcing the continuation of the Virginia Tech thank-you card program during the fall semester. As always, don't take this project too seriously and have fun with it.
Withdrawal Dialogue: Commitment Only/Rewarded Commitment

I. Welcome

A. Is there anyone here who did not attend each of the first two meetings of this group?

B. Is there anyone who has some completed thank-you cards to return to us? Please place these cards on your desk and we will collect them.

C. We would now like to collect any unused cards you have with you. Please place these on your desk and we will come around to collect them. If you did not remember to bring your unused cards with you, please tell my assistant and he will provide you with an envelop that you can use to return them or if you prefer, you can drop them off at 5100 Derring Hall. Virginia Tech policy requires that we collect all of the unused cards you were previously issued.

D. As we mentioned at the onset of this study, we are interested in your individual reactions to the Virginia Tech thank-you card program. Is there anyone here who has any questions or would like to share an experience you have had with the thank-you cards?

II. AC Survey

A. We are now going to ask you to complete a brief questionnaire about your opinion on certain items. Please take a few minutes to complete this questionnaire. Remember, your responses will be kept strictly confidential.

III. Issue more cards.

A. We are now going to issue you a new set of thank-you cards. These cards are to be used over the next 3 weeks. Please tell my associate the last 4 digits of your SS# as he/she comes by. (Wait until all have cards)

B. We want to remind you that your participation in this study is asking you to look for behaviors which deserve recognition, complete the upper portion of the card, hand it to the person being thanked, and complete the bottom portion of the card and return it
to 5100 Derring Hall. The portion of the card to be returned can be placed in this drop box which is hanging from a bulletin board just outside of Derring 5100, mailed through campus mail, or through the U.S. Postal service. We would like these cards returned within 24-48 hours after they have been completed or at a minimum by the Monday following their date of completion.

C. Please remember, these cards are for your use only. Please do not share these cards with anyone. All unused cards will be collected. Also please remember that by signing the informed consent form at the first meeting, you have agreed not to discuss this project with anyone until your participation has been completed.

D. If you run out of cards, you may pick-up more at 5100 Derring Hall during regular business hours.

V. Motivational Speech

A. We remain excited about this pilot program for Virginia Tech. We are also encouraged that you have found the opportunity to use the thank-you cards. Although this meeting officially marks the end of the pledge period for which most of you agreed to hand-out and return 5 thank-you cards a week, we want to remind you that this is a semester long program and would like to ask that you continue to hand-out as many thank-you cards as you feel comfortable with, or none at all. Please remember that the thank-you cards do not have to be used on the Tech campus. We will provide you with an envelope which can be used to return any unused cards to us at the end of the semester. In addition, if you would like to receive a written report about the thank-you card program, you can request one by enclosing a note containing your name and address in the envelope with the unused cards. Furthermore, we would like to ask that you look for fliers announcing the continuation of the Virginia Tech thank-you card program during the fall semester. As always, don't take this project too seriously and have fun with it.
Withdrawal Dialogue: Rewarded Response

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B. Is there anyone who has some completed thank-you cards to return to us? Please place these cards on your desk and we will collect them.

C. We would now like to collect any unused cards you have with you. Please place these on your desk and we will come around to collect them. If you did not remember to bring your unused cards with you, please tell my assistant and he will provide you with an envelope that you can use to return them or if you prefer, you can drop them off at 5100 Derring Hall. Virginia Tech policy requires that we collect all of the unused cards you were previously issued.

D. As we mentioned at the onset of this study, we are interested in your individual reactions to the Virginia Tech thank-you card program. Is there anyone here who has any questions or would like to share an experience you have had with the thank-you cards?

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VITA

Thomas Edward Boyce

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Virginia Tech
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A. **Personal History**

D.O.B. 03-21-64
New Haven CT

B. **Educational History:**

1. Vanderbilt University, Nashville, TN. 1982
2. Berklee College of Music, Boston, MA 1984-1985
   Major: Music Performance, Theory
3. University of Florida, Gainesville, FL
   Major: Music in combination with Psychology
   Degree: B.M. with Honors 1992

C. **Honors:**

Membership in Golden Key National Honor Society
Membership in Phi Kappa Phi National Honor Society

D. **Professional Affiliations:**

Virginia Academy of Science, Virginia Psychological Association,
Association for Behavior Analysis
E. Representative Work:

Published Abstracts


Presentations


at the 5th semi-annual convention of the Florida Association for Behavior Analysis/Organizational Behavior Management Network, Clearwater Beach, FL.


\[\text{Signature:} \text{Bo} \text{yce}\]